

15 July 2026

Staffordshire Moorlands District Council
Planning Services

Dear Sir/Madam,

MONEYSTONE PARK, STAFFORDSHIRE
Phase 1 Reserved Matters Approval SMD/2019/0646
Condition 27 - Detailed Energy Statement Compliance Note

This note has been prepared by Futureserv Ltd in support of the application to discharge Condition 27 attached to the Phase 1 Reserved Matters Approval for the proposed leisure development at Moneystone Park, Staffordshire.

Condition 27 states:

"No development shall commence until a detailed Energy Statement has been submitted to and approved in writing by the Local Planning Authority. The detailed Energy Statement shall be in accordance with the Energy Statement prepared by Futureserv (Document Ref: P7700-FS-XX-XX-RP-M-003-P02) received by Staffordshire Moorlands Council on 2nd September 2024. The development shall be constructed and operated in accordance with the approved detailed Energy Statement."

The detailed Energy Statement submitted for the purposes of Condition 27 is the Futureserv Energy Strategy - Statement, document reference P7700-FS-XX-XX-RP-M-003, Revision P02, dated 30 August 2024. A copy is appended to this note. The Applicant confirms that the Phase 1 development will be designed, constructed and operated in accordance with the energy strategy and commitments set out in that document.

Detailed energy commitments

- Fabric-first design: the development will follow the passive design and fabric-first approach described in Sections 5.2, 5.2.1 and 5.2.2 (paragraphs 5.5-5.12), including high-performance insulation, improved airtightness, consideration of solar gain and shading, and natural ventilation where appropriate.
- Building fabric performance: the detailed design will retain fabric performance consistent with the assumptions underpinning the Energy Statement, including the proposed U-values, air permeability and thermal-bridging strategy. Final values will be confirmed through the detailed SAP and SBEM/Part L assessments applicable to the relevant building type.
- Energy-efficient building services: the measures described in Section 5.3 (paragraphs 5.13-5.20) will be incorporated, including efficient hot-water generation, reduced distribution and

standing losses, low-energy fans, pumps and motors, suitable heat recovery where applicable, and appropriate time and temperature controls.

- Holiday lodges: each lodge will use an air source heat pump-based system for space heating and domestic hot-water generation, consistent with paragraphs 2.6, 5.16-5.18 and 5.26. The developed design will use a wet heating system with thermostatic and time control, together with local mechanical extract ventilation and openable windows for purge ventilation.
- Hub and amenity buildings: heating, cooling, hot-water and ventilation systems will be developed using air source heat pump-based solutions and heat-recovery ventilation where appropriate, consistent with paragraphs 5.19, 5.20 and 5.25. The final systems will be verified through detailed design and the relevant Part L assessment.
- Lighting and controls: 100% low-energy lighting will be provided, with presence/absence detection, time control, photocell control and automatic dimming where appropriate, in accordance with paragraphs 5.13-5.15.
- Low and zero-carbon technologies: the feasibility review in Sections 5.4 and 5.42 identifies air source heat pumps as the selected technology. Roof-mounted photovoltaic panels were considered but discounted in the approved strategy on landscape and visual grounds; they are therefore not relied upon to demonstrate compliance with Condition 27.
- Swimming pool and process loads: the detailed energy and servicing strategy for the swimming pool and other process loads will be developed at the relevant design stage, as recognised in paragraphs 1.26 and 3.6. The selected solution will follow the low-energy and low-carbon principles of the approved Energy Statement.
- Performance verification: the Hub Building assessment reported in paragraphs 5.47-5.49 demonstrates a Building Emission Rate of 9.80 kgCO₂/m²/year against a Target Emission Rate of 13.9 kgCO₂/m²/year, representing a 29.5% reduction against the Part L 2021 target. Updated compliance calculations will be produced as the detailed design is finalised.

Implementation and compliance

The appointed detailed design team and contractor will be required to maintain the above strategy through the developed design, specification, construction, commissioning and operation of the development. Any material departure from the approved Energy Statement will be reviewed by a suitably qualified building-services and energy consultant to confirm that the revised proposal provides an equivalent or improved energy and carbon outcome and remains consistent with Condition 27.

On this basis, Futureserv confirms that the submitted Energy Statement provides the detailed energy strategy for Phase 1 and that the development will be delivered in accordance with its core principles

10 Oxford Court
Bishopsgate
Manchester
M2 3WQ

and the specific commitments set out above. Futureserv therefore considers that Condition 27 can be discharged.

Yours faithfully,

Paul Young BEng(Hons) CEng MCIBSE FIHEEM
Associate Director
Futureserv Ltd



DESIGN ENGINEER SUSTAIN

WWW.FUTURESERV.CO.UK

Energy Strategy - Statement

Proposed Leisure Development (Phase 1)

Moneystone Quarry

On behalf of Laver Leisure (Oakamoor) Ltd

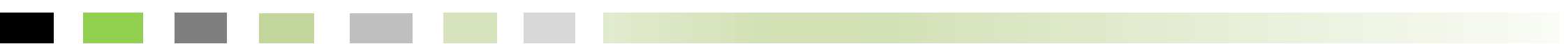
Appeal Reference:

Document Reference: P7700-FS-XX-XX-RP-M-003

Date: 30-08-24

Revision: P02

Status: DRAFT



Contents

Section 1 – Introduction 3

Section 2 – Development Proposals 6

Section 3 – Approach to The Energy Strategy 8

Section 4 – Policy and Legislation 9

Section 5 – Energy Strategy 11

Section 6 – Conclusions 21

Section 1 – Introduction

1.1 This Statement has been prepared on behalf of Laver Leisure (Oakamoor) Ltd in respect of an appeal against Staffordshire Moorlands District Council's ('SMDC') decision to refuse reserved matter planning application ref: SMD/2019/0646 ('the Reserved Matters Planning Application') for Phase 1 of the leisure development ('the Appeal Scheme') at the former Moneystone Quarry, not known as Moneystone Park, ('the Appeal Site').

1.2 I am Paul Young BEng(Hons), Chartered Engineer of the Engineering Council (CEng), Full member of Chartered Institution of Building Services Engineers (MCIBSE) and Fellow of the Institute of Healthcare Engineering and Estate Management.

1.3 I am an Associate Director of Futureserv Ltd, a practice established in 2009 to provide Energy Strategies to support planning applications to comply with Local and National policies governing energy and carbon emissions. I have more than 22 years of applied building services experience in both the public and private sector.

1.4 I believe that the facts stated in this statement and its annexes are true.

1.5 The document supersedes and updates the WSP Energy Strategy issued in June 2016. In particular, due to the update in the Core Strategy Development Plan, Building Regulations Approved Document Part L and the enhanced requirements to reduce carbon emissions for the development. It has been necessary to update the Energy Strategy, due to the changes in Part L and the advancement in low carbon technology since the original application.

1.6 The relevant policies that the energy statement considered when the report was submitted were:

- Approved Document Part L of Building Regulations 2021;
- Churnet Valley Masterplan Supplementary Planning Document (SPD) (26th March 2014);
- Staffordshire Moorlands – Local Plan Document (Adopted September 2020);

KEY CONSIDERATIONS/LOCAL POLICIES

1.7 Staffordshire Moorlands Core Strategy document contains two specific policies relevant to the development.

1.8 SD1 "Sustainable Use of Resources" requires all development to make sustainable use of resources and adapt to climate change. With regards to energy use it is required that "development is located and designed to minimise energy needs and to take advantage of maximised orientation to achieve energy savings in line with policy SD3".

1.9 DS3 covers carbon saving measures and states that the Council "will support developers proposing to exceed the thermal efficiency standards required by law at the time of the application

1.10 The Moneystone Quarry development is considered within the Churnet Valley Masterplan SPD. The concept statement for the site details the "creation of a high quality, sustainable environment which will promote environmental awareness – use of sustainable building techniques, low carbon, low impact development with on-site energy generation, green technology and eco-lodges".

1.11 Whilst no specific targets are contained in the CVP (such as a minimum use of renewable energy on site) this strategy recognises the aims of local policy in that it assesses the feasibility of technologies for inclusion in design. It is important to note that the Reason for Refusal of the reserved matters application refers principally to the design of the lodges. It does not allege that the proposals conflict with either Policy SD3 or DS3 which relate to energy and sustainability. Nevertheless, the sustainability credentials of the scheme are an important element of its design quality, and therefore this statement has been prepared to address this. Energy minimisation is an integral part of the overall design and has been considered from the outset.

1.12 The strategy is essentially based on the reduction of energy consumption by use of passive construction measures, fabric first approach alongside active energy efficient equipment in conjunction with renewable energy generation such as a Photovoltaic array.

1.13 To maintain the quality of the development, the energy statement was prepared to treat the lodges as they were fixed dwellings to comply with Approved Document Part L Building Regulations, which would not otherwise apply. This will ensure the fixed buildings services proposals comply are fully aligned with Building Regulations to encourage energy efficiency. Compliance with the energy strategy is expected to be secured by the imposition of conditions.

1.14 This Energy Strategy has been prepared to evidence the environmental aspects of the proposed development highlighting the Energy/Carbon emission profile, to assess the options available for reducing energy consumption and associated CO₂ emissions in accordance with Staffordshire Moorlands district council's policies and guidelines.

1.15 This statement will also demonstrate how the proposals have been brought forward in the context of a strong commitment to sustainability, which is considered to be an integral part of the design of a high quality scheme of the type proposed, and will not only show achievement of policy compliance as per the Guide to Development in Staffordshire Moorlands Local Plan, but also that sustainability objectives form an integral part of the Applicant's aspirations for this development.

1.16 Grid electricity has now seen significant decarbonisation since the last update to AD Part L 2013 driving the need to change the energy strategy in the development from Gas fired to all electric space heating. The reduction in carbon factors relating to grid electricity is mostly due to the closure of coal fired power stations and the implementation of grid connected renewable energy technologies.

1.17 This improvement in carbon factors reflects the shift from gas fired fuelled systems to lower carbon systems, thus making electric powered systems more viable and in reality, less carbon intensive than solutions such as gas fired boilers which were previously promoted.

1.18 The active building services are to be designed to minimise direct energy consumption and CO₂ emissions, with particular emphasis on the following;

- Increased hot water generating efficiencies
- Reduced standing losses from pipes and cylinders

- Energy efficient LED lighting
- Improved lighting controls
- Low energy motors in pumps and fans
- Enhanced heating controls
- Combined natural and mechanical ventilation systems

1.19 The proposed lodges perform well and show potential for a reduction in emissions with 2021 Building Regulations Part L1. While it is not necessary for the lodges to comply with Building Regulations, it is an aspiration of the development to achieve this. This Energy Statement will be the subject of a condition to ensure that the design of the scheme will comply with the evidence base underpinning it.

1.20 This will improve over time as the UK electricity grid continues to decarbonise.

In line with Staffordshire Moorlands Local Plan, a feasibility study was carried out to outline which Low or zero technologies could be included in design to reduce carbon emissions and generate renewable energy to meet the onsite demand.

1.21 The following technologies were considered in the renewable energy study:

- Wind Turbines
- Photovoltaic
- Solar Thermal
- Biomass boilers
- Ground/Air Source Heat Pumps
- Gas Combined Heat and Power (CHP)

1.22 The use of wind turbines has been rejected due to the visual presence of the structure, given the particular visual sensitivities of the landscape and the ethos of the scheme being to work within this context.

1.23 For the lodges, Gas CHP and Biomass boilers have both been ruled out given the requirement for both to feed a district network and the low predicted thermal demand of individual units and overall thermal density.

1.24 The utilisation of a ground source heat pump may not be deemed the optimum solution as lodges do not have a sustained heat load throughout the year and also considering the intrusive nature of drilling the necessary bore holes and installation of equipment.

1.25 Photovoltaics panels are considered feasible for the development given availability of some of the roofs orientated from south-east to south-west. These technologies could be applied on the suitably orientated roofs at the development and have the potential to reduce carbon emissions significantly.

1.26 Whilst the energy demand from non-domestic units has not been modelled as being particularly high, the swimming pool will require a significant and relatively constant thermal demand and Gas CHP or Air Source Heat Pumps are recommended for further consideration at the detailed design stage of that part of the project.

1.27 In December 2015, a circa. 5MW solar farm on adjacent land received planning permission (Reference: SMD/2015/0220) and was constructed at a later date.

1.28 Solar farms do not emit Greenhouse Gases or air pollutants, which contributes to reducing the carbon footprint and mitigating the adverse effects of climate change. They encourage local energy production, which reduces transmission and distribution losses, increasing energy efficiency.

1.29 The 5MW solar farm was installed on adjacent land not used for the leisure development, to provide renewable energy generation in a manner complimentary to the development, and significantly offset the power consumption from the power grid.



Figure 1 – overview site plan

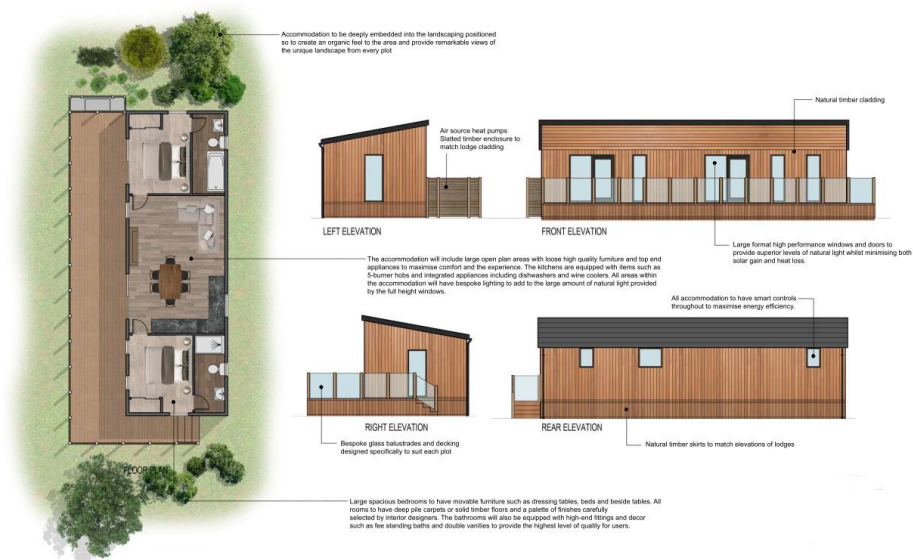
Section 2 – Development Proposals

2.1 This stage of the development shall consist of 190 holiday lodges that will typically be single storey and will average 6m x 12m in dimension. These will form phase 1, with a further 60 lodges proposed to be added in phase 2.

2.2 Non-residential units proposed include a visitor centre, Lake Café, Leisure Hub building, Central Hub building, Swimming pool, children's play areas, multi-use games area, Quarry Park, maintenance/housekeeping building, parking facilities, site infrastructure and associated landscaping.



Twin lodge with end deck



Single lodge with side deck

2.3 This Energy Strategy has been prepared to assess the environmental aspects of this stage of the proposed development highlighting the Energy/Carbon emission profile and to assess the options available for reducing energy consumption and associated CO₂ emissions, in accordance with Staffordshire Moorlands district Council's policies and guidelines.

2.4 Assessing against future net zero targets help to determine the future potential magnitude of change when compared to industry net zero benchmarks. This development has been designed targeting The London Energy Transformation Initiative and Royal Institute of British Architects best practices for whole life embodied carbon and operational energy for 2025 and 2030. See table below for information.

Sustainable Outcome Metrics	Business as Usual	2025 Target	2030 Target
Whole Life Embodied Carbon (kgCO ₂ e/m ²)	1,200	< 800	< 625
Operational Energy (kWh/m ² /year)	120	70	35

2.5 Futureserv Consulting Engineers have collaborated with the design team to provide a holistic solution for the buildings that will provide an efficient envelope and contain intelligent building services reducing the environmental impact of the development whilst providing comfortable living accommodation.

2.6 The intention is that each lodge will have a dedicated air source heat pump, which will be located under the external decking area, and therefore not visible from the exterior of the lodge. This will provide highly efficient, low carbon heating and hot water to each lodge, utilising power from the electricity grid.

Section 3 – Approach to The Energy Strategy

Lodges

3.1 To demonstrate efficient building specification & compliance to the building regulations Part L, a Standard Assessment Procedure (SAP) analysis was carried out for a typical single lodge of the development to prove the high-quality of the development in sustainability terms.

3.2 A representative lodge was modelled using the SAP methodology based on an average unit determined from the Schedule of Accommodation for the proposed development. Being permanent buildings, the lodges would be treated as dwellings under Part L of the UK Building Regulations.

3.3 The output of this software allowed the assessment of whether the building specification chosen achieved compliance with both the Target Emissions Rate (TER) and Target Fabric Energy Efficiency (TFEE) of Part L of the Building Regulations 2021. Compliance with Building Regulations was assured as specifications as detailed in Part L of Building Regulations were used as a minimum. The output of this software allowed for an estimate of total site energy consumption and emissions to be calculated through extrapolation.

3.4 These Lodges do not require comply with the Building Regulations, however using this voluntary approach to the Lodges ensures the units are built to the highest quality and adheres to the local and national policies promoting energy efficiency throughout. I understand that the council considers that the lodges will be 'merely caravans'. This is one of a number of factors that will distinguish their design from 'merely caravans'.

Hub/Amenity Buildings

3.5 A further model was developed using Simplified Building Energy Model (SBEM) software to represent the non-domestic elements. The fabric and systems applied to the building model were those as detailed in Part L2A of Building Regulations.

3.6 The fabric and systems applied to building models were those as detailed in Part L2a of Building Regulations. The SBEM does not account for process loads, such as the swimming pool, and whilst this is not relevant for consideration in relation to building regulations it is an important factor in the design of the overall energy provision on site.

Solar Farm

3.7 In December 2015, a circa. 5MW solar farm on adjacent land received planning permission (Reference: SMD/2015/0220) and was constructed at a later date.

3.8 Solar farms do not emit Greenhouse Gases or air pollutants, which contributes to reducing the carbon footprint and mitigating the adverse effects of climate change. They encourage local energy production, which reduces transmission and distribution losses, increasing energy efficiency.

3.9 The 5MW solar farm was conceived and installed to significantly off set the power consumption for the leisure development and the proposed Development will benefit from receiving power from the adjacent Solar farm. As a matter of face, the solar farm has been operational for a number of years in advance of the leisure scheme. But it is nonetheless of note that the two elements were conceived of together.

Site-wide Considerations

3.10 As set out in further detail in the Planning Statement of Case, the scheme includes a range of existing and new footpaths and bridleways which will connect into the existing footpath network, enhancing the accessibility of the site and creating opportunities for walking, cycling and horse riding.

3.11 In addition, a Travel Plan was approved by the Outline Planning Permission which secured a range of measures to promote sustainable transport modes and improve connectivity within the Churnut Valley.

3.12 As set out in the Design Statement of Case and Landscape Statement of Case, both the materials for the buildings and the hard landscaping have been

selected to be of a high quality, including natural stone and timber from accredited sources.

Section 4 – Policy and Legislation

4.1 There are a number of planning policies both national and local that apply to the proposed development.

4.2 The UK government has signed up to a legally binding agreement to reduce Carbon emissions by 34% based on 1990 levels before 2020 and by 80% before 2050, this responsibility is being discharged using the Climate Change Act 2008.

4.3 The National Planning Policy Framework (NPPF), offers specific guidance which highlights the UK's aspiration to support a transition to a Low Carbon future in a changing climate and in particular, to encourage the use of renewable resources such as Renewable Energy and states, at paragraph 157;

Planning authorities should ensure that development plans contribute to global sustainability by addressing the causes and effects of climate change through policies which reduce energy use and emissions, promote development of renewable energy resources, and take climate change impacts into account in the location and design of development.

Local Policies

4.4 The proposed development is within Staffordshire moorlands district Council's Centre. This means that Staffordshire moorlands Local Plan Document applies to this development.

4.5 The development must aim to meet the requirements of the Staffordshire Moorlands Local plan 2020.

4.6 Development must follow the principles of the Energy Hierarchy, being designed:

- to reduce the need for energy through design features;
- to reduce the need for energy through energy efficient features; and
- to meet residual energy requirements through the use of low or zero carbon energy generating technologies.

Renewable Energy Generation

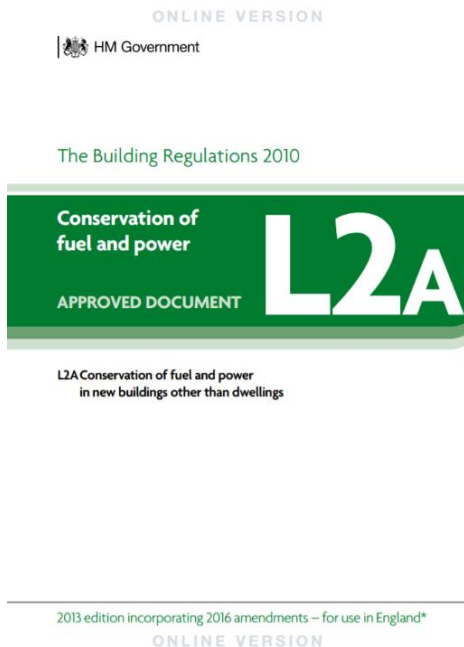
1. Proposals for the installation of renewable and low carbon energy technologies, including both building-integrated and standalone schemes will be promoted and encouraged, provided that:
 - a) any significant adverse impacts can be mitigated;
 - b) where biofuels are to be utilised, they should be obtained from sustainable sources and transportation distances are minimised;
 - c) any energy centre is suitably located and designed to a high quality such that it is sympathetically integrated with its surroundings; and
 - d) all proposals are consistent with any relevant Policies in this Plan.

4.7 Renewable energy can be supplied at a national level from sources such as large offshore wind farms, solar farms, or hydroelectric schemes. Although not a source of renewable energy, nuclear power is a major low carbon source. Locally, smaller, and on-site renewable energy schemes include solar photovoltaic, solar thermal, ground source and air source heat pumps and, where fuelled by biomass or biogas, district energy schemes and combined heat and power plants (CHP).

Building Regulations Part L (2021) Compliance

4.8 As part of the design process it has been decided to treat the proposed lodges as if they were 'dwellings' and therefore designed to comply with the Building regulations approved document Part L1A & L2A, 2021 edition to prove the high quality of the development. These approved documents took effect from 15th June 2022.

4.9 The scheme will be design and required to comply with the criteria of Building Regulations (2021) Part L1A for residential (building systems only) and Part L2A (2021) for the non - residential units.

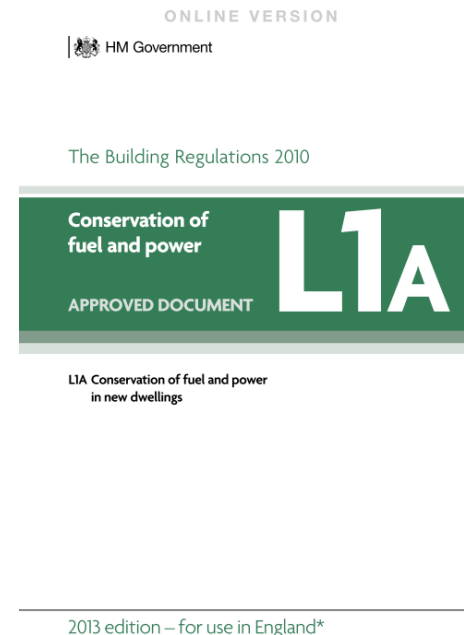


4.10 The main changes in these approved documents from the previous revisions are that;

- The notional building used to determine carbon dioxide targets is the same size and shape as the actual building, constructed to a concurrent specification. The Part L2a 2021 specifications have been strengthened to deliver **27%** carbon dioxide savings across the new non-domestic building mix relative to part L 2010. The Part L1a 2021 specifications have been strengthened to deliver **39%** carbon dioxide savings across the new domestic buildings relative to part L 2010.

4.11 The improvements to Part L demonstrate the already significant improvement. Our baseline assessment will be to meet these targets, as a result the initial assessment will be a vast improvement on the regulations that Staffordshire Moorlands District Council's local plan aims for.

4.12 The goal will be to further improve upon current regulations.



Section 5 – Energy Strategy

5.1 - Baseline Energy Assessment

5.1 Futureserv Ltd have conducted analysis for this stage of the development on the current design of the Lodges to show compliance with the Building Regulations Part L1A & L2A:2021, therefore setting a reference baseline. This was carried out in order to understand the development's Carbon emissions without any Carbon Emission mitigation measures.

5.2 This baseline energy assessment has been developed, producing a preliminary Simplified Building Energy Model (SBEM) calculation & SAP calculations (Standard Assessment Procedure) for the building. The baseline models have been created to provide Target Emission rates (TER). The calculations then in turn produce Building Emission rates (BER) & Dwelling Emission rates (DER) which are equal to or lower than that of the TER.

5.3 SBEM & SAP are the standard assessment methods for the carbon emission levels of a building. This considers the fabric properties of the building, the method of heating/cooling/ventilating/hot water etc and produces an estimate of carbon emissions.

5.4 If the building does not pass the Part L criteria, then it is an iterative process to add renewable/low carbon technologies, to lower the overall carbon emissions.

5.2 - Passive Design Improvements

5.5 On the completion of the model and establishment of the Target Emission Rates (TER), the dwelling emissions have been reduced through judicious passive design. This has involved an assessment of non-energy consuming design decisions to create a fabric first approach to energy efficiency.

5.6 Passive fabric measures across all the building include improvements to the thermal performance and air tightness above Part L requirements of the Building Regulations and this effectively allows the building envelope to attenuate external conditions without recourse to active Building Services.

5.2.1 – Fabric First Approach

5.7 A 'fabric first' approach to building design involves maximising the performance of the components and materials that make up the building fabric itself, before considering the use of mechanical or electrical building services systems. This can help reduce capital and operational costs, improve energy efficiency and reduce carbon emissions. A fabric first method can also reduce the need for maintenance during the building's life.

5.8 Buildings designed and constructed using the fabric first approach aim to minimise the need for energy consumption through methods such as:

- Maximising airtightness.
- Using Super-high resistance insulation.
- Optimising solar gain through the provision of openings and shading.
- Optimising natural ventilation.

5.9 Focussing on the building fabric first, is generally considered to be more sustainable than relying on energy saving technology, or renewable energy generation, which can be expensive, can have a high embodied energy and may or may not be used efficiently by the consumer.

5.10 Having energy efficiency integrated into the building envelope can mean occupants are required to do less to operate their building and not have

to adjust their habits or learn about new technologies. This can result in less reliance on the end user regarding the buildings energy efficiency.

5.11 Fabric first building systems can be constructed off site, resulting in higher quality and so better performance, reduced labour costs and an increased speed of build.

5.2.2 - Fabric Values

5.12 The fabric values used will endeavour to be the best available in the industry for these type of lodges. This will result in lower heat losses and therefore a reduction in energy usage to maintain a comfortable internal temperature during the heating season.

5.3 - Energy Efficiency Improvements

5.13 In addition to the Passive design measures described in the preceding Section to improve the building envelope performance, the Active Building Services are to be designed to minimise direct energy consumption and CO₂ emissions, with particular emphasis on the following;

- Increased hot water generating efficiencies
- Reduced standing losses from pipes and cylinders
- Energy efficient LED lighting
- Improved lighting controls
- Low energy motors in pumps and fans
- Efficient heat recovery in relevant systems
- Enhanced heating controls with Wi-Fi enabled

5.14 All internal lighting installations will make use of low energy technologies combined with presence and absence detection in conjunction with timed setbacks. 100% low energy lighting provision will be included within the development. Photo switching and automatic dimming will be specified to the communal areas of the building in order to improve the efficiency of the lighting system.

5.15 All fans, motors and pumps shall be specified to incorporate ECA accredited technology and appropriate controls.

Lodges

5.16 Lodges are proposed to have pressurised hot water cylinders and the heating demand for these will be fed by an ASHP system.

5.17 The heating demand will be met by an ASHP system feeding a wet heating system with radiators within each lodge. These will be complete with thermostatic and time controllers. These units will also have enhanced central enabled controls.

5.18 The ventilation will be via localised extract fan units. These will provide extract ventilation to kitchens and bathrooms. Purge ventilation will be via openable windows, giving the occupants the final control over the environment in their lodges.

Construction Element	Specification
Ventilation	Natural Ventilation supplemented with Extract
Lighting	100% low energy fittings
Space Heating	ASHP or Electric panel heater
Heating Control	Thermostatic and time controlled
Water Heating	Electric cylinders or ASHP fed cylinder

Hub Building

5.19 The Hub building is proposed to have an underfloor heating system which is to be fed by an air source heat pump system. The hot water demand will also be met by a hot water storage system that is fed by the ASHP system.

5.20 The ventilation system has been designed to be supplied by Local MVHR which will provide heat recovery as well as balanced ventilation supply. Purge ventilation will be via openable windows, giving the occupants the final control over the environment.

Construction Element	Specification
Ventilation	MVHR
Lighting	100% low energy fittings
Space Heating	Air Source Heat Pump (ASHP)
Heating Control	Thermostatic and time controlled
Water Heating	Air Source Heat Pump (ASHP)

5.4 - Renewable Energy Improvements

5.21 In order to comply with Staffordshire Moorlands Local Plan, which aims to utilise renewable or low carbon technologies, there are a number of options to consider. All currently acknowledged and commercially available technologies have been considered and assessed with the conclusions summarised below.

Ground Source Heat Pumps

5.22 The ground below buildings remains at a constant temperature of around 10°C to 12°C offering the ability to extract energy in the winter and discharge energy in the summer from cooling with the energy exchange being achieved via open or closed loop systems linked to heat pumps.



Ground Source Heat Pump Installation

5.23 The inclusion of Ground Source Heat Pumps is not applicable for the site selected and has been discounted for this development.

Air Source Heat Pumps

5.24 Air source heat pumps provide a solution for using renewable energy taken from ambient air to heat a building in the winter and discharge heat from cooling in the summer.



Typical External Condenser Unit

5.25 The hub communal area of the development, refrigerant based air source heat pumps will be utilised in the form of a VRF system to heat and cool the areas, due to the higher concentration of occupancy.

5.26 The Lodges are proposed to use ASHP as a solution for the space heating and hot water demand. The ASHP would be located under the external decking area, so would not be visible from the exterior of the lodges.

Solar Photovoltaic Panels

5.27 The option to utilise roof mounted or Building Integrated Photovoltaic panels to generate electrical energy is a renewable energy method of generating Carbon free electrical power.

5.28 Due to the extent of occupancy within the development, there is likely to be a fairly constant base electrical load prevalent on the building which may be mitigated in part by the use of Solar PV.

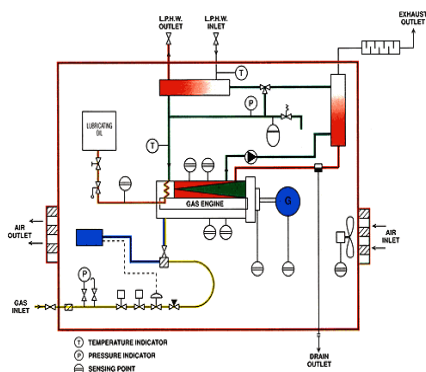


PV System components

5.29 The system would help reduce carbon emissions from grid electricity and feed into the grid in low demand periods contributing to the decarbonisation of the grid through grid export capability. However, this technology has been discounted due to aesthetic considerations with the rural nature of the site, since it has been determined that adding roof mounted PV panels would have the potential to draw the eye of a viewer to the lodges and therefore increase their prominence.

Combined Heat and Power (CHP)

5.30 On-site generation of electricity and the utilisation of waste heat from this process within a building can create a beneficial arrangement whereby the transmission losses of grid supplied electricity can be omitted. The use of CHP tends to require a steady and continuous heat demand therefore the large quantities of domestic hot water associated with lodges would not satisfy this requirement.



Diagrammatic layout of CHP unit

5.31 However, the integration of Combined Heat and Power technology has been discounted due to utilising decarbonised grid electricity over traditional fossil fuel heating systems.

Solar Thermal Collectors

5.32 The use of flat plate & evacuated tube thermal panels has been identified as a potential method of harnessing renewable solar energy by pre-heating domestic hot water provision.

5.33 The introduction of the renewable Heat Incentive may further improve the financial viability for the technology.



Example of Solar Thermal unit

5.34 However, there is a conflict between the use of local independent water heaters within each lodge and a central solar thermal collector array.

5.35 Interconnecting solar thermal panels with remote lodges cylinders is not conducive or efficient due to extended distribution losses. Furthermore, the restricted flat roof areas available negate the inclusion of a panel system offering any significant contributions. Therefore, without being able to offer a good contribution of renewable energy alongside the logistic and strategy issues, the installation of solar thermal panels has been discounted for the development.

Wind Turbines

5.36 Wind energy can be a cost-effective method of renewable power generation and turbines can produce Carbon neutral electricity with outputs ranging from watts to megawatts.

5.37 The most common design is for three blades mounted on a horizontal axis, which is free to rotate into the wind on a tall tower. The blades drive a

generator either directly or via a gearbox (generally for larger machines) to produce electricity.

5.38 The electricity can either link to the grid or charge batteries. An inverter is required to convert the electricity from direct current (DC) to alternating current (AC) for feeding into the grid.

5.39 There are a variety of wind turbines on the market ranging from smaller turbines that can be attached directly to a buildings structure to larger stand-alone turbines. sub-urban generally poorer yields for output from small scale wind obstructions and local topography.



City centre and locations experience electricity and medium turbines, due to variations in

Wind Turbine Installation

Biomass

5.40 Some success on other projects has been made with the implementation of wood fuelled energy equipment forming a Carbon Neutral heat source.

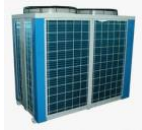
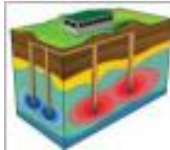
5.41 Although, it is carbon neutral overall, but there would still be significant emissions in the area it is utilised, which would be onerous to treat and achieve comply with the Clean Air Act. Biomass would have to be installed as a centralised system, with pipework to each lodge. Due to the low heat demand of each lodge and the low occupation density of the site overall, this would be an inefficient method of providing heat overall. This has led to a dismissal of this technology.

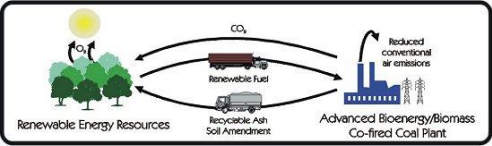


Biomass Boiler

Summary of Systems

5.42 The following table provides an overview of the systems and their suitability for this project:

Proposed Technology	Image	Comments
Air Source Heat Pumps SELECTED		Refrigerant Air Source Heat Pumps will be utilised for the main non-residential areas and amenity areas of the development, where cooling as well as heating will be required due to the higher occupancy concentration. Hot water and heating for the lodges has the potential to utilise heat pumps to meet demand, with each lodge having a pressurised hot water cylinder. The Hub building will have underfloor heating and hot water served by an ASHP.
Solar Photovoltaic DISCOUNTED		The roof areas of the lodge buildings could be used to accommodate such a system and this would be able to offer a good contribution of renewable energy. However, the installation of photovoltaics has been discounted due to aesthetic considerations for this site.
Ground Source Heat Pump DISCOUNTED		The inclusion of Ground Source Heat Pumps is not an option for the site selected and has been discounted for this development.
Solar Thermal DISCOUNTED		There is a conflict between the use of local independent water heaters within each lodges and a central solar thermal collector array. Interconnecting solar thermal panels with remote lodges cylinders is not conducive or efficient due to extended distribution losses. Furthermore, the view is taken that the roof space would better be utilised to offset electricity emissions through the use of a photovoltaic system.

Biomass Boilers DISCOUNTED		Biomass boiler solutions have been discounted at this location due to potential clean air issues and deliverability logistics.
Wind Turbines DISCOUNTED		Wind turbines have been discounted due to the resulting visual/noise impact from the equipment, and relatively poor performance of the solution when used within Urban and Sub-Urban locations.
Combined Heat and Power DISCOUNTED		The integration of Combined Heat and Power technology has been discounted due to utilise decarbonised grid electricity over traditional fossil fuel heating systems.

5.5 - Energy Generation and Distribution Systems

5.43 As a consultant, Futureserv has an over-arching philosophy delivering design of a truly sustainable nature, employing widely recognised methods.

- Be Lean – **Fabric First Approach** - Reduce demand wherever possible utilising passive measures.
- Be Clean - Where energy is used, then it should be optimised to operate at the highest efficiencies practical.
- Be Green - Take advantage of renewable options to reduce fossil fuel energy sources.

5.44 The proposed development will be designed to be served by ASHP system throughout, utilising the ever-increasing clean electricity provided from the UK grid.

5.45 All plant and equipment would be equipped with energy control measures incorporating variable speed drives, with low energy motors provided on ventilation fans and hydraulic pumps.

5.46 The development will equip all sanitary appliances with low water flow devices.

5.6 – Carbon & Energy Performance Calculations

5.47 To demonstrate the environmental benefits associated with the energy hierarchy, approved SAP software has been used to generate the proposed carbon reductions for the development. The Hub building has been assessed using IES against current Part L (2021) regulations.

5.48 The table below indicates the carbon emissions for the development following the Be Lean, Be Clean, Be Green design approach in the form of Target Emission Rates and Building Emission Rates (Kg CO₂/m²/annum).

Hub Building

Non-Residential Hub building Average Target Emissions Rate	13.9 kg/CO₂/m²
Average Non-Residential Hub building Emission Rate	9.80 kg/CO₂/m²
Carbon Reduction from Target Emission Rates Part L 2021	29.50% reduction over Part L 2021 emissions

5.49 The Part L 2021 specifications have been strengthened to deliver 39 per cent carbon dioxide savings relative to part L 2010 therefore the development emissions rate is a **72.1% improvement** on the Part L 2010.

5.50 The lodges do not need to comply with Building Regulations, but the aspiration is for these to be the most efficient possible, in terms of fabric values, and use the same low carbon and renewable technologies that would be used in other buildings to achieve Part L compliance. Such measures have the potential to secure substantial savings, compared to the scheme as originally conceived when it was consented in 2016.

Section 6 – Conclusions

6.1 The Reason for Refusal for the reserved matters application does not refer to energy and sustainability matters as a reason for refusal. However, this Statement has been prepared to demonstrate the Energy Strategy for the development and show how it will be high quality in sustainability terms.

6.2 I conclude, to maintain the quality of the development, the lodges will utilise low carbon and renewable technology, in line with what is required for Approved Document Part L Building Regulations compliance. This will ensure the fixed buildings services proposals comply are aligned with Building Regulations to encourage energy efficiency and will exceed SMDC's policy requirements.

6.3 This Energy Strategy addresses the planning requirements of Staffordshire Moorlands district council as set out in Staffordshire Moorlands Local Plan adopted September 2020.

6.4 This statement has also demonstrated how the proposals have been brought forward in the context of a strong commitment to sustainability and will not only show achievement of policy compliance as per the Guide to Development in Staffordshire Moorlands Local Plan, but also that sustainability objectives form an integral part of the Appellant's aspirations for this development.

6.5 A feasibility study was carried out to outline which Low or zero technologies could be included in design to reduce carbon emissions and generate renewable energy to meet the onsite demand.

6.6 The following technologies are considered to be incorporated within the development.

- Air Source Heat Pumps

6.7 In addition, the park as a whole has been carefully designed to create a high-quality sustainable development, including the enhancement of walking, cycling and bridleway routes, a Travel Plan to promote sustainable modes of travel and high-quality materials for both buildings and landscaping from sustainable sources.

